Transmission 1 ines for 1 high Frequency and High Density Packaging.

E. Kolawa, L. Lowry, M. Herman, K. Lee
Jet Propulsion Laboratory
4800 Oak Grove Dr. MS 158-103
Pasadena CA 91109
voice 818-353-2593
fax 818-354-0998

The Cr/Au transmission lines were deposited by sputtering on three kind of substrates: alumina, aluminum nitride, and aluminum nitride coated alumina, Low cost alumina substrates of high quality and excellent surface finish arc readily available but thermal conductivity of alumina may not be adequate for certain applications. On the other and, aluminum nitride provides high thermal conductivity but commercially available substrates do not have adequate surface finish for high frequency application (30-40 G] lz) and arc relatively expensive. In order to take advantage of both the surface finish of alumina and the high thermal conductivity of A IN, we deposited A IN films on alumina substrates using rf reactive sputtering of Al target in argon/nitrogen plasma. Wc compare mechanical, thermal, and electrical performance of Cr/Au transmission lines on each substrate by measuring their adhesion, stress, resistivity, chemical stability and high frequency characteristics,